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SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEAE, WITH DESCRIPTIONS OF THE SPECIES.

BY J. B. ELLIS AND B. M. EVERHART.

(Continued from page 69.)

67. *HYPOMYCES TRANSFORMANS*, Pk. 29th Rep. New York State Mus., p. 57. On *Cantharellus cibarius* which it transforms into an irregular mass. New York (Peck), Massachusetts (S. J. Harkness), Pennsylvania (Everhart).

Subiculum effused, variable in color, pallid, golden-yellow, ochraceous or brick-red; perithecia ovate or subglobose, papillate, sunk in the subiculum; ostiola prominent, obtuse, amber or orange; asci cylindrical; sporidia fusiform, apiculate at each end, somewhat rough, continuous or rarely with the endochrome obscurely divided, colorless, 33—38 μ long.

68. *HYPOMYCES GEOGLOSSI*, E. & E. On *Geoglossum (glabrum)?* Newfield, N. J., September, 1876. Occupying the greater part of the hymenium of the host, the proper fruit of which is mostly suppressed.

Perithecia immersed, subglobose (75—80 μ), subangular from mutual pressure; ostiola papilliform, black; asci clavate-cylindrical, sessile, yellowish, 75—80 $\times$ 6—7 μ , containing eight crowded, subbiseriate, clavate-oblong, continuous, hyaline, 6—8 $\times$ 2½—3 μ , sporidia. The subiculum appears to be obsolete, the perithecia being immersed in the hymenium of the host. As no notes were taken on the fresh specimens, the color of the perithecia can not be certainly stated, but in the dry specimens, they are nearly or quite black.

69. *HYPOMYCES XYPHILUS*, Pk. Bull. Torr. Bot. Club, XI, p. 28.

Subiculum effused, whitish; perithecia numerous, crowded, small, yellowish, with a blunt ostiolum; asci cylindrical, 90—112 $\times$ 6—7½ μ ; sporidia continuous, uniseriate, subfusiform, 15—17 $\times$ 5—6 μ . On decaying wood. Ohio (Morgan).

70. *HYPOMYCES HYALINUS*, Schw. Syn. Car., No. 35. On *Russula foetens*. Carolina (Schw.)

Effused, thin, glabrous, hyaline-fuscos, roughened with the crowded, dark-colored ostiola; asci cylindrical, 8-spored; sporidia elliptic-fusoid, $15-20 \times 4\frac{1}{2}-5 \mu$, uniseriate, continuous, greenish-hyaline.

* * *Sporidia uniseptate*.

71. *HYPOMYCES LATERITIUS*, Fr. On the hymenium of several species of *Lactarius*. New England (Murray & Sprague), Carolina, on *Lactarius Indigo* (Ravenel), Potsdam, N. Y. (Ellis).

The mycelium forms a dense, white, felt-like stratum, which finally becomes more compact and of a pale brick color; perithecia spherical or subovate, abundant, sunk in the stroma, except their slightly prominent, smooth, brownish ostiola; asci cylindrical, $200-250 \mu$ long, spore-bearing part $112 \times 6-7 \mu$; sporidia uniseriate, elongate-fusiform, uniseptate, acuminate at each end, yellowish-hyaline, $18-20 \times 4-4\frac{1}{2} \mu$.

72. *HYPOMYCES AURANTIUS*, Pers. On *Sterium* and on the under side of logs. Carolina. (Ravenel.)

Perithecia gregarious, subsphaeroid, their apices projecting from the effused, orange-colored subiculum; asci cylindrical, 8-spored, $110-140 \times 6 \mu$; sporidia uniseriate, uniseptate, fusoid, with the ends subapiculate, slightly curved, nearly smooth, $15-24 \times 3-6 \mu$, hyaline. The white mould, *Diplocladium minus*, Bon., is said to be its conidial stage.

73. *HYPOMYCES LACTIFLUORUM*, Schw. Syn. Car., No. 34. On *Lactarius*, especially *L. piperatus*. Carolina (Ravenel), Pennsylvania (Everhart), New Jersey (Ellis).

In the affected specimens of *Lactarius*, the gills are entirely obliterated, so that the hymenium of the *Agaric* presents an even, orange-colored surface in which the subglobose perithecia are thickly bedded with only their slightly prominent reddish ostiola visible; asci long and slender; sporidia uniseriate, fusiform, straight or slightly curved, rough, hyaline, 1-septate, cuspidate, pointed at the ends, $30-38 \times 6-8 \mu$. The general appearance is much the same as that of the preceding species, but it differs in its larger, rough, warted sporidia and the absence of the felt-like mycelium. In decay, the color changes to a purplish red.

74. *HYPOMYCES ROSELLUS* (A. & S.) Consp., p. 88, tab. 7, fig. 3. On various decaying fungi and on the ground or on the leaves and rubbish near where fungi have decayed. Pennsylvania (Michener & Everhart), Plainfield, N. J. (Meschutt).

Mycelium lax, effuse, consisting of loosely-woven threads, at first white and bearing conidia (*Tricothecium agaricinum*, Bon.), then deep rose-color or nearly blood-red; perithecia deep rose-red, subspherical or ovoid, of variable size, buried in the stroma, except the projecting, rather obtuse papilliform ostiolum; asci linear, $150 \times 6-7 \mu$, with eight uniseriate, narrowly lanceolate, apiculate, straight or slightly curved, hyaline, $22-37 \times 5-7 \mu$ sporidia, nucleate or spuriously 1-3-septate and often subinequilateral.

Dr. C. B. Plowright, in his valuable monograph of this genus in Grevillea, Vol. XI, says: "There are two varieties of this species, one with larger, pointed perithecia, as figured by Greville and by Albertini & Schweinitz; the other, with smaller and more obtuse perithecia. The sporidia vary a good deal in size, as does the color of the subiculum, which is sometimes nearly absent. Sometimes it is almost white, but mostly rose colored, with a whitish margin." The specimens from Mr. Meschutt were on decaying leaves, forming little patches $\frac{1}{2}$ —1 cm. across.

75. *HYPOMYCES OCHRACEUS*, Pers. On decaying *Agaricus*. Pennsylvania (Michener).

Perithecia crowded, subglobose, yellowish, immersed, with a short, thick, obtuse, exserted ostium; subiculum (*Verticillium agaricinum*, Cda.) at first white, then straw-colored, ochraceous and yellow; asci cylindrical, $25\text{--}30 \times 6\frac{1}{2} \mu$, containing eight oblong-lanceolate, uniseptate, constricted, $35 \times 6\frac{1}{2} \mu$ sporidia, which are mucronate at each end.

76. *HYPOMYCES ASTEROPHORUS*, Tul. Parasitic on *Nyctalis*. Carolina. (Ravenel.)

Perithecia originating in an effused, byssoid stroma, in which they are thickly strewn, ovoid or sphaeroid, narrowed above into a more or less elongated neck, with an acute, pervious, ciliate ostium, pale, yellowish-brown, subhyaline, 150μ high by $70\text{--}90 \mu$ broad; asci broadly ovate, abruptly attenuated below, $40\text{--}50 \times 18\text{--}20 \mu$, containing 4—6 narrowly lanceolate, slightly curved, mucronate at each end, 1-septate, subhyaline, then dirty-yellow, $25\text{--}35 \times 6 \mu$ sporidia.

Dr. Plowright, in his monograph already cited, says: "The perithecia of this species of *Hypomyces* differ considerably from those of the other members of the genus. They are formed of very large polygonal cells, which become elongated and parallel where they form the ostium and are formed by the intertwining of the dilated and convoluted bases of the conical-bearing hyphae that compose the stroma. These (the perithecia) are most frequently found upon the inside of the stem of the *Nyctalis*, but they are by no means of common occurrence."

77. *HYPOMYCES TOMENTOSUS*, Fr. Found on same *Agaric*. Berkeley. Notices of N. Am. Fungi, in Grevillea IV, p. 15.

Of this species, but little appears to be known. It is stated by Cooke, in Grevillea XII, p. 80, that the asci are cylindrical and the sporidia lanceolate, mucronate at each end, uniseptate, hyaline and $42\text{--}50 \times 6\text{--}7 \mu$.

78. *HYPOMYCES INSIGNIS*, B. & C. Fungi Mexico. No. 6, p. 424.

Red; mycelium effused; perithecia oblong, more deeply colored; sporidia fusiform, apiculate at each end, 37μ long, spuriously 1-septate, hyaline. On the hymenium and pileus of *Cantharellus*, which it covers with a red stratum and obliterates the gills. In Mexico, near Orizaba (Botteri).

The above is copied from Saccardo's Sylloge, Vol. II, p. 472, and is all we know of this species. From the brief description, one might suppose that this and *H. transformans*, Pk., are the same.

79. *HYPOMYCES TEGILLUM*, B. & C. Grev. IV, p. 15. "On pine. Carolina. (Ravenel).

"Perithecia ovate, rufous-brown, scattered, a continuous white mycelium, like thin parchment."

80. *HYPOMYCES FLAVESCENS*, Schw.

Perithecia gregarious, distinct, globose-ovate, papillate, whitish, covered with a villose coat that finally disappears, seated on a milk-white, broadly effused, pubescent subiculum; asci cylindrical; sporidia narrowly-elliptical, hyaline (uniseptate)? On hymenium of some resupinate *Polyporus*. Pennsylvania (Schweinitz.)

81. *HYPOMYCES PANNOSUS*, Schw.

Stroma effused, whitish, shaggy, thin, margin fimbriate-cottony; perithecia semi-immersed, pale, with dark-colored, punctiform ostiola; asci cylindrical; sporidia (?) On rotten wood. Ex. Herb. Schw. The descriptions of this and the preceding species are taken from Grevillea XII, p. 80, and were, apparently, made from specimens in Herb. Berkeley. They are not in Schw. Synopsis N. Am. The *H. pannosus* here described is said to be a different thing from the *Sphaeria pannosa*, Fr.

In the next two species, the fructification is unknown.

82. *HYPOMYCES TUBERICOLA*, Schw. Syn. N. Am. No. 1192. On an old "White Tuber" infesting the outer bark. Found at Pocono, Pa.

Effused, thin, brown-black, margin scarcely determinate; perithecia at first subimmersed, finally erumpent ("omnino prominulis"), brown-black, rugose tuberculate, minute, subconic, densely crowded, at length collapsing. The interior of the perithecia is said to be entirely similar to that of the preceding species, *i. e.*, *H. Lactifluorum*, etc. Whether the "White Tuber" is an old specimen of *Pachyma cocos* is uncertain.

83. *HYPOMYCES BOLETICOLA*, Schw. Svn. N. Am., No. 1494. Found but seldom on very much decayed *Polyporus citrinus*, at Bethlehem, Pa. Allied to *H. aurantia*, Fr., but distinguished by its paler color, by the character of the subiculum (stroma) and shape of the perithecia; subiculum effused, interrupted, of loose texture, with irregular spaces ("plagis irregularibus"), pale orange with the margin whitening out; perithecia only partially immersed, conic-ovate, more or less scattered at first, colored like the stroma, at length orange-red, rather soft, papillate, easily separating from the stroma, leaving small cavities, contents of the perithecia very white, at length oozing out and remaining attached to the ostiola like a white villous pubescence.

MYCOGONE CERVINA, Ditm., which is found on *Helvella* and on various decaying *Pezizas* and *Asterophora Pezizæ*, Cda., on *P. hemispherica*, both of which are found here, are, with several similar moulds, regarded as the conidial stage of different species of *Hypomyces*, of which the ascigerous stage has not been found.

GEN. VI, *POLYSTIGMA*, PERSOON.-(Moug. et Nest, No. 170). Stroma subcarnose, effused, colored (ochraceous, red or yellow), phylogenous; perithecia immersed; asci 8-spored; sporidia ovoid, continuous, hyaline.

84. POLYSTIGMA RUBRUM (Pers.), D. C.

(*Xyloma rubrum*, Pers. Syn., 105; *Dothidia rubra* (Pers.), Fr. S. M., 553.) Hypophyllous, suborbicular, slightly convex, 2—4 millim. across, with an even margin, red, at length darker; perithecia (cells) small, immersed, reddish; ostiola impressed, punctiform, becoming more prominent; asci clavate, 8-spored; sporidia ovoid, subobtuse, straight, subhyaline, $10 \times 6 \mu$. The spermogonial stage is *Libertella rubra*, Bon. Spermatia filiform, uncinata, 30μ long. On living leaves of several species of *Prunus* (*P. domestica*, *P. spinosa*). In Saccardo's Sylloge, the species is credited to this country, but we are not aware by whom or where collected.

85. POLYSTIGMA (?) BUMELIÆ, Schw.

(*Dothidia Bumeliæ*, Schw. Syn., N. Am., No. 1884.) Epiphyllous on living leaves of *Bumelia oblongifolia*, found in the Arkansas region by Nuttall. Stroma orbicular, large $\frac{3}{4}$ cm. and over, ovate or of somewhat irregular shape, conspicuous on both sides of the leaf, on the upper side brick-red and somewhat shining as if varnished, paler and without any varnished appearance below; perithecia (cells) few, scattered, minutely pseudo-ostiolate and subprominent.

GEN. VII, NECTRIA, Fries.—Perithecia carnose-membranaceous, mostly bright colored, cæspitose and generally seated on a subcarnose stroma (tubercularia); sporidia oblong or fusoid, hyaline.

A. *Sporidia continuos.** *Asci polysporus* (*Chilonectria*).

86. NECTRIA CUCURBITULA, Curr.

Perithecia cæspitose, orange-red, nearly smooth, at length collapsing; ostiolum papilliform, minute; asci clavate-cylindrical, $75-100 \times 10-12 \mu$, filled with countless minute sporidia, 2—3 (mostly $2\frac{1}{2} \mu$) $\times 1-1\frac{1}{4} \mu$. In the early stages of growth, the asci contain 2—4 cylindrical bodies about 3μ thick and varying in length from 15μ to nearly the entire length of the asci. These elongated bodies are subundulate and often appear distinctly multiseptate with the septa either running square across or with their ends a little curved so as to give the appearance of a series of hyaline, subglobose sporidia, but finally these cylindrical bodies are filled with the minute sporidia, which at length fill the entire cavity of the asci. Sometimes, instead of the elongated bodies, some of the asci will be seen to contain one or two series of faintly-outlined, subglobose cells, which, also, are at length filled with the minute sporidia and disappear. The peculiarity here noted has been observed in all the specimens on coniferous trees thus far examined and we fancy we see the same structure in the *N. cucurbitula*, issued by Fries in his Sclor. Suec., which we have had the opportunity of examining. On *Pinus rigida* and *P. strobus*, Newfield, N. J., and on *Abies balsamea*, West Chester, Pa. According to Saccardo, in Sylloge, found also on various deciduous trees.

87. *NECTRIA CORYLI*, Fckl.

Perithecia *cæspitose*, erumpent, smooth, subastomous, dark red, collapsing when dry, not differing in appearance from those of the preceding species, unless in being of a deeper shade of red; asci clavate, 75—100 x 10—12 μ , mostly filled with minute sporidia, exactly as in the preceding species, but some contain cylindric-fusoid (sporidia)? 1-septate, 10—15 x $2\frac{1}{2}$ —3 μ , with a short, curved apiculus at each end. These fusoid sporidia, lying in two or three series in the asci, are so arranged with their contiguous ends in contact as to resemble, closely, the cylindrical bodies mentioned in the preceding species and, like those, are often seen filled, more or less completely, with the minute, oblong sporidia. This species is found exclusively on bark and limbs of deciduous trees. According to Dr. Rehm, the specimens in N. A. F., 159, belong here. We are inclined to think that *N. Coryli*, Fckl., is only a form of var. of *N. cucurbitula*, Curr., which is restricted in its habitat to coniferous trees as *N. Coryli* is to the deciduous trees. There are three *Nectrias* with the specific name *cucurbitula*, of which the one already described is now recognized by mycologists as *N. cucurbitula*, Curr., while another species (on conifers) with oblong biconoid, 1-septate sporidia is known as *N. cucurbitula*, Tode., and still another, with oblong-fusoid, 5—6-septate sporidia, is known as *Nectria (Calonectria) cucurbitula*, Fr. We are not aware that these last two species have yet been found in this country.

88. *NECTRIA INAURATA*, B. & Br.—We have seen no American specimens of this species, and copy the following description from Cooke's Hand-book:

"*Cæspitose*; perithecia globose, then depressed, at length brown, tinged with red, frosted with yellow; ostiola papilliform, at length impressed, naked, black-brown; asci and sporidia of two kinds—some clavate, with numerous small, curved sporidia, others cylindrical, with eight elliptical sporidia, appendiculate at each end. The larger asci are clavate, containing curved, minute sporidia, not exceeding $3\frac{1}{2}$ μ . The smaller cylindrical asci contain eight elliptical, 1-septate sporidia, $12\frac{1}{2}$ —15 μ long, furnished with a delicate, hyaline appendage at each end."

It is to be noted that the above-quoted description of the fruit applies well to that of *N. Coryli*, Fckl., and the specimens of *N. inaurata*, in Saccardo's *Mycotheca Veneta*, No. 1446 (which are the only ones we have examined), do not differ, as far as we can see, either in the perithecia or the fructification, from the specimens in N. A. F., 159, which (see Dr. Rehm) are *N. Coryli*, Fckl.

B. *Sporidia uniseptate*; asci 8-spored.

89. *NECTRIA CINNABARINA*, Tode.

Stroma (*Tubercularia vulgaris*, Tode.) pulvinate, subhemispheric, subcarnose, yellowish, conidiiferous; perithecia *cæspitose*, vermilion-red, at length darker, rough, with a papilliform ostium; asci clavate-

cylindrical, subattenuated above, 75—90 x 8—11 μ ; sporidia sub-biseriate, oblong, obtuse at each end, uniseptate, straight or slightly curved, hyaline, 12—15 x 5—7 μ . On limbs of various deciduous trees. Common.

90. *NECTRIA RIBIS*, Tode.

Stroma and perithecia much the same as in the preceding species, except that the latter are rather smoother and the sporidia mostly longer, 13—20 x 4—6 μ (mostly about 16 x 4—4½ μ). We have examined the specimens in Vize's *Micro-fungi Britannici*, 153, and in Plowright's *Sphæriacei Britannici*, 211, and the slight differences indicated above are all we can see to separate this from *N. cinnabarina*. Specimens on gooseberry twigs sent from Canada by Prof. Macoun agree well with the English specimen, only the sporidia are rather narrower, mostly not over 4 or 4½ μ . The Canada specimens are the only ones we have seen collected here, and we do not see it mentioned by Berkeley in his *North Am. Fungi* in *Grevillea*.

91. *NECTRIA RUBICARPA*, Cke. *Grev. VII*, p. 50.

“Cæspitose, red, scarcely papillate, obtusely verrucose-roughened; asci cylindrical, 65—75 x 6—7 μ ; sporidia uniseriate, elliptical, uniseptate, 10—12 x 4—4½ μ , mostly not much constricted. Looks like a miniature red raspberry, both in the clusters and individual perithecia, the latter becoming eventually nearly even.” On dead limbs of *Gelsemium*. So. Carolina (Ravenel). In our copy of *Rav. F. Am.*, the specimen (No. 341) has the perithecia distinctly collapsed. In his diagnosis of his *Ascomycetes*, under No. 337, Dr. Rehm refers the specimens of *Nectria punicea*, Kz. & Schm., in *N. A. F.*, No. 80, to *N. rubicarpa*, Ck. We have carefully compared the *N. A. F.* specimens with *N. rubicarpa*, in *Rav. F. Am.*, and they seem to us to be the same thing. Referring to our exsiccati, we find in Plowright's *Sph. Brit.*, No. 206, a specimen labeled *N. punicea*, Kz. & Schm., in which the perithecia are not collapsed and the sporidia 15—19 x 4—5 μ , which are about the measurements given in *Sylloge*. The specimen of *N. punicea* in Roumeguere's *Fungi Gallici*, No., 1465, we can not distinguish from *N. cinnabarina*, Fr. If the specimen of *N. punicea* in Plowright's *Sph. Brit.* is authentic, the *N. A. F.* specimens can hardly be that species, having most of the sporidia less than 12 μ long, but the *N. A. F.* specimens agree better with the original description of *N. punicea* in their collapsed perithecia than do those in *Sphæriacei Britannici*. We have then, for the present, to leave the matter in doubt. The specimens in *N. A. F.*, 772, do not appear to be *N. rubicarpa*, Cke.

92. *NECTRIA COCCINEA*, Pers.

Perithecia cæspitose, ovoid, smooth, bright red, papilliform, about one fifth millim. in diam., usually not collapsing, seated on a yellowish, slightly erumpent stroma, which is often nearly obsolete; asci subcylindrical, 80—95 x 6—7 μ ; sporidia uniseriate, uniseptate, hyaline or nearly so, scarcely constricted, rather acutely elliptical, 12—15 x 4½—5 μ (12—16 x 5—7, Sacc.) On bark of various deciduous trees. Common.

93. *NECTRIA RUSSELLII*, B. & C. Grev. IV, p. 45.

"Cæspitose, red, inclining to brown; ostiolum papilliform, at length sunk from collapsing; sporidia cymbiform, uniseptate, 15—20 μ long. On elm, New England, Russell." *Var. Magnolia*, Sacc., differs somewhat from the type in its shorter (10—11 x 5—6 μ) sporidia, slightly constricted, with the lower cell a little narrower and the perithecia at length collapsing. On bark of *Magnolia*, So. Ca. (Ravenel).

94. *NECTRIA OFFUSCATA*, B. & C. Grev. IV, p. 45.

"Cæspitose, dingy, dark, brown-red, minutely granulated, ostiolum depressed; asci clavate; sporidia biseriata, oblong, about one fourth as broad as long; externally resembling *N. Russellii*. On *Hibiscus*. South Carolina."

95. *NECTRIA DITISSIMA*, Tul.

Perithecia densely gregarious, small, subglobose, bright red, vertically collapsed when prematurely dried; ostiolum papilliform, minute; asci clavate, about 80 μ long and 8—10 μ broad above, contracted below into a slender base; sporidia crowded, biseriata, fusoid-oblong, 1-septate, slightly curved, 14—16 x 4—4½ μ . On dead *Acacia*. So. Ca. (Ravenel), on *Melia*, Louisiana (Langlois).

96. *NECTRIA VERRUCOSA*, Schw. Syn. N. Am. 1401.

Perithecia cæspitose, ovate-globose, verrucose-roughened, pale red, not collapsing, about ½ millim. in diam., seated on an orange red, depressed, globose, substipitate stroma (*Tubercularia*), forming groups 1—2 millim. in diam.; asci oblong-cylindrical, with a short, substipitate base, 60—70 x 10—12 μ ; sporidia biseriata, oblong, uniseptate, 12—16 x 4—5 μ . The stroma, as in most other *Nectrias*, is finally hidden and partially obliterated by the perithecia. Common on *Morus* and *Sassafras*, Pennsylvania (Schweinitz), on *Morus*, *Melia*, etc., So. Ca. (Ravenel) and on *Morus*, N. Jersey (Ellis). Differs from *N. cinnabarina* in the peculiar roughening of the perithecia and in its shorter asci and mostly narrower sporidia. *N. coccinia* has the perithecia nearly smooth or when dry slightly furfuraceous.

(To be continued.)

NOTES ON FLORIDA FUNGI.--No. 6.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

My observations, thus far, justify the opinion that not many species are to be found in the pine woods section nor on the genus *Pinus*. Even dead trees and limbs are singularly bare of this order. This may be due to the resinous properties of the pine and also to the fact that pine woods are generally open, admitting much light and sunshine. In part, also,